FLORIDA HIGHWAYS

Florida "Fisherman's Luck." A Day's Catch by E. W. Brown of DeLand, from the Waters of Sarasota County.

Vol. 1 AUGUST, 1924 No. 9

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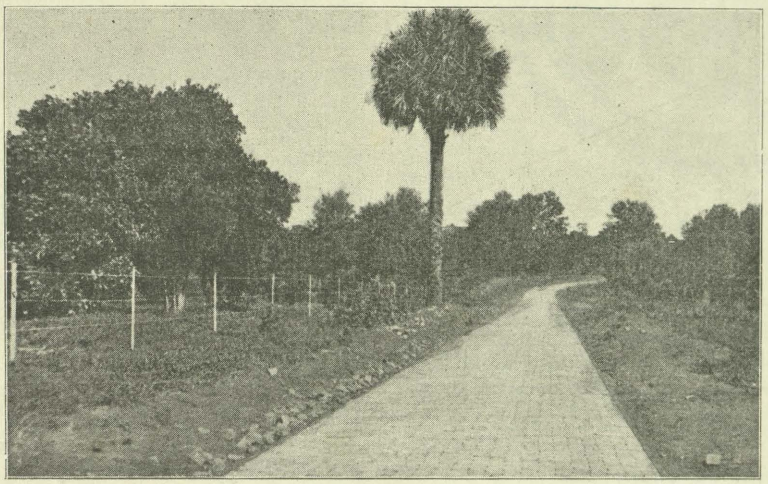
FLORIDA HIGHWAYS



Vol. 1 AUGUST, 1924 No. 9

Historic Highways of Florida

By CLARA R. HAYDEN, Assistant Librarian, Florida State College for Women.

I wonder how many of us, as we roll along the hard surface of a twentieth century highway, give any thought to its historic background? Not many, I suspect. We take the road for granted. But nine chances out of ten it has back of it the romance of the country through which it runs; and has borne upon its surface pageants from every period of the country's development. The highways of no State in the Union have a richer historic background than those of Florida.

When the first white men, the Spanish Explorers, came to Florida they were compelled to depend upon the Indians for guides. The Indian trails led from village to village of their tribe. The villages, in turn, lay near a spring or body of fresh water. In fact, the earliest, or primitive trails, had always for their terminus the cool waters of a spring or lake.

We have no definite knowledge today of any of the earliest trails, except as they became the route of the Spanish explorer. These routes come down to us from the old Spanish maps, and though they can not always be held authentic, they have served as guides for students of Florida history.

Narvaez, who landed in what is now known as Clearwater Bay, just north of Tampa, in 1527, was the first white man to penetrate into the peninsula. He was under the impression that he would reach the country of Mexico and claim some of its vast wealth. An old map of 1528 gives his route as extending inland from Tampa Bay to almost the present site of Ocala, northwest across the Suwannee River at a point not far from where the town of Madison now stands, then almost directly west to a wretched Indian village on Lake Miccosukee, a few miles from the northern border of Leon County. He and his followers were probably the first white men to pass over the Indian trails near the present site of Tallahassee as he proceeded south to Appalachee Bay and the site to be later known as St. Marks.

Eleven years later DeSoto, landing at Tampa Bay, followed almost identically the trail of the unfortunate Narvaez. They found along the route red men who remembered well the white men who had preceded them years before. In a grove near the north coast, probably St. Marks, they found the bleaching bones of the horses of the first Spanish soldiers. At other points forges for the shoeing of horses, and Spanish coins were found. Some of DeSoto's men marched on to Pensacola Bay, later joining their chief on his march northeast into Georgia, and on to the present site of Augusta.

(Continued on Page Four)

Florida Highways

Published Monthly
Official Publication of the State Road Department

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B. A. Meginniss, Attorney for the Department, Editor and Business Manager

Volume 1 August, 1924 Number 9

"THE SHORT END, AND WHY."

"A recent issue of Florida Highways, a magazine issued by the State Road Department, carries a statement of contracts awarded by the department from January 1, 1924, to June 12, 1924, which gives the name of the contractor, number of the project, length in miles, length in feet, cost and type.

"The contract price of the listed work is $1,672,263.35, of which the Tampa Daily Times figures, North Florida gets 69 per cent.

"Well, there's nothing singular about this. It has been going on for years, and because South Florida voters permitted it.

"North and West Florida have more votes in the Legislature than South Florida has. This is due to lack of fair representation. South Florida representatives and senators could have changed the representation years ago if they had battled for the interests of their part of the state.

"When John W. Watson was the Dade county representative in the Legislature he put in a good deal of his time campaigning for the nomination for governor. Now Mr. Watson has been elected state senator. He wants to be president of the senate. In advancing his campaign he is likely to make concessions to North Florida and sacrifice the interests of South Florida. He did not get anything for South Florida by being a candidate for governor and then withdrawing; he won't get anything for South Florida as president of the senate that he couldn't get as a mere senator, and as merely a senator he might get more.

"South Florida needs more officeholders who will attend to the business they are elected to transact and pay less attention to furthering other political ambitions or private interests. But this section of the State will not get its share of road money or other funds until the voters exercise more independence. In the meantime North Florida is getting while the getting is good. The politicians up there fear that their hold on the State is weakening."

The foregoing under the above caption appeared in The Everglades News, published at Canal Point, under date of July 18th, and we gratefully acknowledge receipt of a marked copy.

The tenor of the article is a survival of a sectionalism which we are glad to say is fast dying out. Our people are realizing more and more that there is no North Florida and South Florida, but a great Florida, every part of which is interested in the construction of a great and permanent state-wide road system.

Nothing in the clipping referred to gives us an inkling as to where the imaginary line bounding the so-called South and North Florida is located, and this line has been in many instances variously placed. Its definite location, however, for the purpose of this discussion may be reasonably determined by reference to the figures quoted.

Included in the figures used to make this percentage are three Bradford counyt projects aggregating $284,577.06, and two Citrus county projects aggregating $301,483.83. These contracts are being carried out with county funds—in other words the counties named are putting up the money to do the work and the Department is supervising the same. When these are deducted from the totals shown, it

immediately appears that contracts were let contemplating the use of State funds only 32% of which are in what would be designated as North Florida.

Thus, it is seen that the implied charge of sectionalism is not sustained. The State Road Department is not and has not been interested in any particular section. It is charged with the responsibility of building a system of STATE roads in the broadest sense, and it is conscientiously and actively engaged in carrying out that purpose. Its object is to secure a system of roads that will cover the entire State, and enable our people, as well as visitors, to travel over the whole State. And even if the implication had been true in fact, it does not necessarily follow that such a programme would indicate favoritism. Roads must begin somewhere if they are to go somewhere, and it might very well happen, due to physical conditions, that a larger part of the work on a State system at a given time may be in one locality. For example, the table of "Status of Construction," on page 18 of the same issue shows that the Department has under construction at the present time in Brevard county alone work involving a mileage of 65.28 miles, 50.78 miles of which are on State Road No. 4. And surely no one will be heard to exclaim that the Department is building this road for Brevard county. It constitutes a link, and a most important link in a great road system, and the Department is interested primarily and wholeheartedly in the building of that system.

Another link of great importance is that part of State Road No. 2 north of Lake City. The Department will shortly let a contract for the construction of a portion of this road. It lies in what would be referred to as North Florida, and yet it is an actual fact that its construction is of more vital interest to Tampa, Orlando, and in fact to all of peninsular Florida, than to the counties through which it will actually pass, for the reason that it is an inter-state feeder of both roads 2 and 5, and gives inlet to the State for the traffic carried by these two roads. The point of all which is that it is unfair to judge the programme of the Department by location of the work under construction. Every piece of work undertaken by the Department is entered into because of its relation to the State system, and never because of its advantage or importance to the particular locality. The Department is in fact a STATE Road Department, and its policy is to build a system of State Roads—roads which will cover the entire State, and take care of the tremendous traffic which Florida enjoys and will continue to enjoy in ever increasing proportions.

HIGHWAY BEAUTIFICATION

Much has been done in the past few months along the lines of beautifying Florida highways. Manatee county is taking an active part in creating sentiment which will bring about the beautification of State Road No. 5, which has recently been completed in Hillsborough County and is now open for the entire distance between Tampa and the Manatee County cities.

Pinellas County citizens are taking an active part in plans for the continuation of the Memorial highway beautification plan and are endeavoring to bring about similar improvements from the Hillsborough County line through Oldsmar and Clearwater to St. Petersburg.

Lake County is waging an active war against signs along the highway, and it would be a revelation for some to see the difference between the beauty of the Lake County right-of-way and the right-of-way in other sections of the State.—Highway Engineer and Contractor.

$500,000 BRIDGE IN PUTNAM COUNTY

Palatka, Fla.—Plans are being prepared by Daniel B. Luten, engineer, Indianapolis, Indiana, for the construction of a $500,000 concrete bridge over St. Johns River at Palatka. The structure will be erected by the board of bond trustees for special road and bridge district No. 7, J. W. Hart, secretary, and will replace a 4400-foot bridge. The new bridge will probably consist of a 2500-foot bridge proper and 1600 feet of fill. Proposals will be invited in about sixty days.—Manufacturers Record.

Song

I was cold and tired,
That day.
Seemed like I'd never
Get home.
Then I came to you—
And you took me in.
Cold, tired, wet, hungry—
You took me in,
Mudhole,
For keeps! W. A. V.
—Penn Ways.

Burying the Hatchet

Minneapolis and St. Paul are famous rivals. They decided to end animosities by getting together at a great dinner, according to Forbes Magazine. A prominent citizen of Minneapolis in a very forcible manner eulogized the twin cities and urged that they become a united city.

When he finished, a gentleman from St. Paul arose and stated that there was just one question he wanted to ask, "What shall we name the united city?"

The gentlemen from Minneapolis arose and after considerable thinking, said, "I would name it Minnehaha—'Minne' for Minneapolis and 'Ha! Ha!" for Saint Paul."—The Christian Register, Boston.

Give Her Time

Rastus—"Ah wants a divorce. Dat woman jes' talk, talk, talk, night an' day. Ah cain't get no rest and dat talk am drivin' me crazy."

Young Lawyer—"What does she talk about "

Rastus—"She doan' say."—Life.

Then and Now

The oldtimer who died with his boots on was a bad man; the modern a pedestrian.—Shreveport Journal.

HISTORIC HIGHWAYS OF FLORIDA

(Continued from Page One)

The men who came to the east coast, with the possible exception of Ponce de Leon, came to establish settlements. Soon there were several forts, alternately possessed by the French and Spanish. From Port Royal, South Carolina, to New Smyrna, Florida, there was a chain of forts: Fort Caroline, which afterwards was called Fort San Mateo by the Spanards who captured it from the French under Rabault; Fort St. Augustine and several smaller forts—one at the mouth of the St. Johns River and one across the river on Batten Island. Winsor, the historian, also mentions a fortification at Santa Lucia to the south, probably in what is now St. Lucie County.

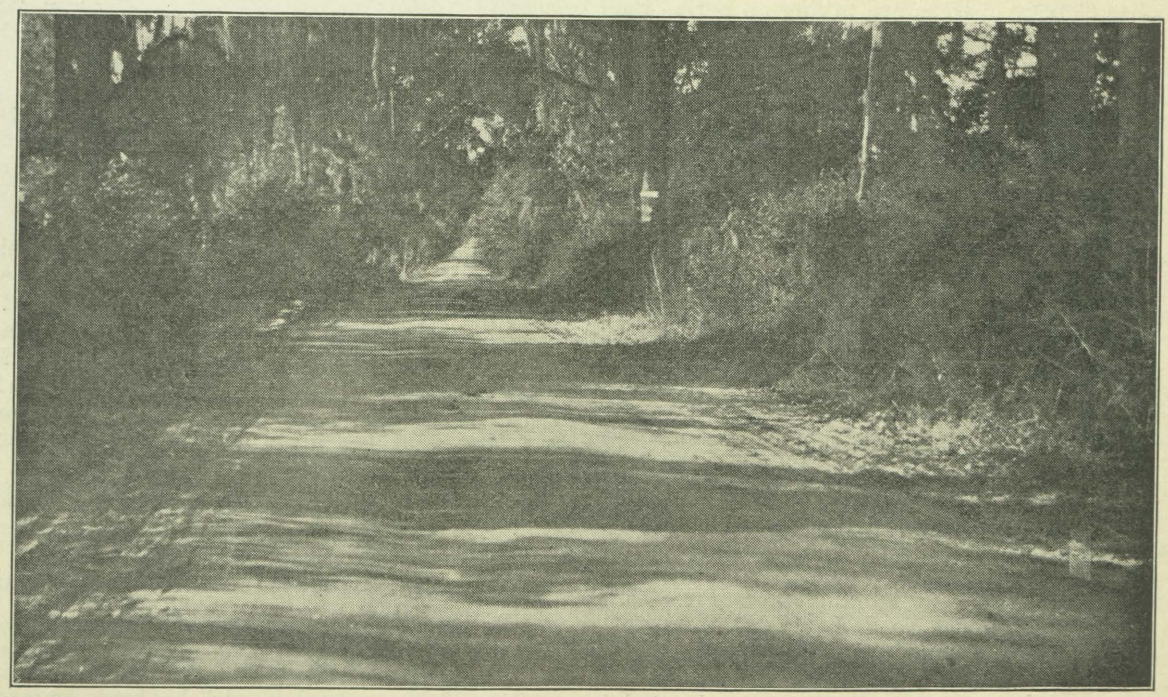
We see in this chain of forts a national plan of the Spanish government. It was the policy of Spain to establish chains of forts and missions connected by a highway. We find this true in California and along the west banks of the Mississippi, where their missionary zeal found its reward in a more docile native than the Indians of Florida. In spite of their many disappointments they must have had such a plan for Florida, for although none of their roads became great Cameno Reals they did have many miles of roads or trails, for we read of their marching from one post to another.

Missions were established in middle Florida as early as the 16th century by priests from the east coast, but it was not until along in the 17th century that the Spanish successfully established missions in west Florida. Then for about seventy-five years mission and post—side by side—flourished in the Apalachee tribe. There is no doubt that the Catholic fathers travelled from east Florida to west Florida over trails that were destined to become well known roads. Green in his School History of Florida says: "The work of the missionary was greatly aided by the overland route to Pensacola."

In 1702, when Gov. Moore of South Carolina decided to avenge, in middle Florida, the destruction of Port Royal, he marched, without doubt, over roads that are in use today. We have no map before us showing the route he took, but since he entered the State at Flint River, destroyed the old fort, San Luis, two miles northwest of Tallahassee, then on to St. Marks, we judge he was marching from the northwest to the southeast over the old trails of the early Spanards. They had become a highway for an English conqueror.

On the east coast the road running down from Colerain, Georgia, on the St. Mary's River, to New Smyrna actually became the King's Highway after the English occupation. All travel from St. Augustine to the colonies northeast went over this road.

Perhaps the oldest authentic map on which the highways of the State (at that time a territory) are traced is one drawn by Finley in 1826; just three hundred years after the Spanish explorers had marched up the west coast, two years after the survey of Tallahassee and the same year the corner stone was laid for the Capitol. This map gives a road from St. Augustine up to Jacksonville, then across the State to Tallahassee—following the old trails of the Spanish missionaries. There were no towns between. From Tallahassee it goes to St. Marks, then southeast to Micanope—just north of the present site of Gainesville and southeast through Alachua County to St. Augustine. It also shows the King's Highway, as it was called by the English, to New Smyrna which, of course, included the strip from St. Augustine to Jacksonville mentioned above. A road is shown leading out of Tallahassee northwest to a town on the east border of Jackson County, west of Fort Scott, called Fowltown.



A stretch of the old Stage-Coach Road between St. Augustine and Tallahassee referred to in Mrs. Hayden's Article. Now a part of the Old Spanish Trail just east of Tallahassee.

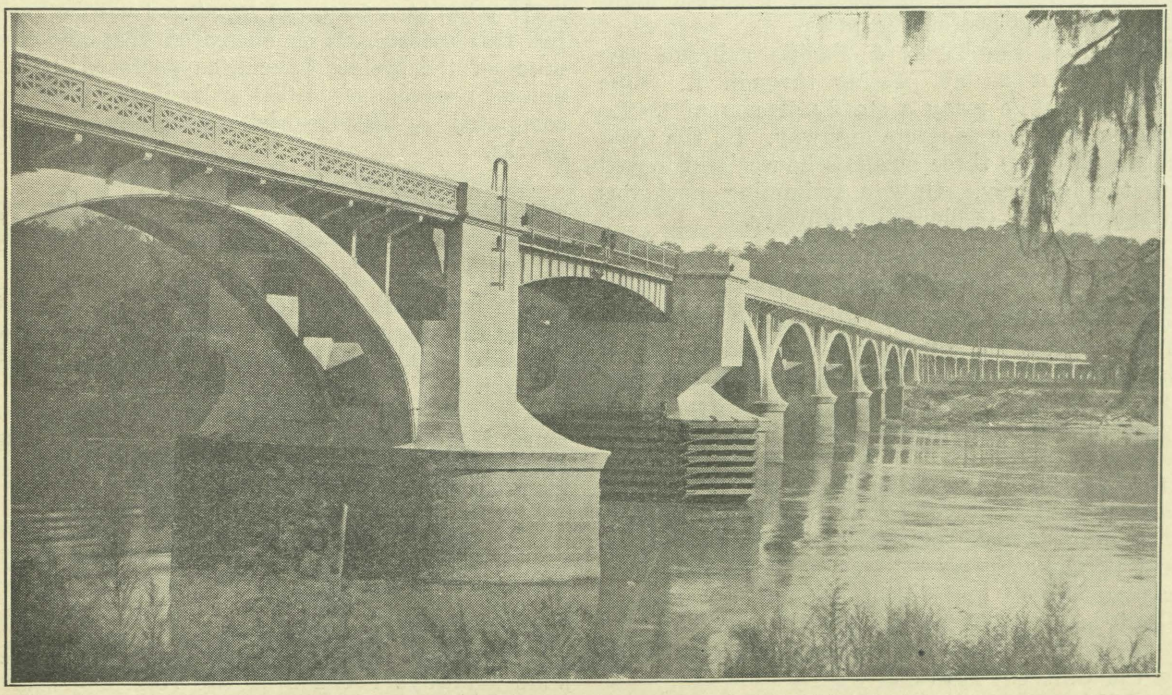
Fort Scott was in turn an English and American supply station for the armies stationed in the southern territories. Situated on the Apalachicola river it had access to and from the gulf. It was while supplies were being shipped up the river from St. Marks in 1817 that the Indians of Fowltown, under English influence, attacked the Americans, and massacred them in retaliation of a previous destruction of their village. Although the immigrants from the north evidently hurried through Fowltown it must have been an important point, being situated on the Chattahoochee River, and having, beside the road to Tallahassee, two other roads leading out from it; one to St. Andrews Bay and the other to Pensacola. After 1850 both Fowltown and Fort Scott were dropped from the maps.

At about the time the map of 1826 appeared Governor Call was making a strong plea in Washington for appropriations to improve the highway going through Tallahassee from St. Augustine to Pensacola. So we are not surprised to find that a map drawn by H. S. Tanner, 1836, was according to an act of Congress, and showed a gradual maturing of Governor Call's plan for a more direct route across the State. It shows the road leading northwest from Tallahassee going through the newly added names of Quincy and Marianna, then north to Webville, making a short curve into Alabama; then southwest to Pensacola, with branch roads running down to St. Andrews Bay and Fort Gadsden near St. Georges Sound. It also included the road to St. Marks. The road to St. Marks was perhaps the most important one, commercially in the State. The map of 1836 was drawn the same year that Florida's first railroad was built, connecting St. Marks with Tallahassee. Today the gulf town is just a small fishing port. Only the old newspapers and older state records attest to her one time importance.

This map gives also the road leading north out of Jacksonville across the St. Marys near Colerain, Georgia, and south through St. Augustine to Mosquito Bar and Fleming Giant on the Indian River. Another road is shown to run from St. Augustine to the central part of the state, to Lake George, Volusia County, and west to Tampa Bay; another to Fort Izart and the long swamp in what is now known as Sumter County. There is shown also an Indian trail across the southern peninsular from Juniper Island, now in Brevard County, to Tampa Bay. It shows Micanopy as still the south-central link between Tallahassee and St. Augustine.

A later map, dated 1853, adds several new points and branches, and omits a few well known names. A road is shown leading off from the main route north to Lake Miccosukee. Monticello is given as the terminus instead of the old village of Miccosukee, the Indian village made famous by Narvaez, and later by being known as the home of William Augustus Bowles, the self-styled king of Florida. Ocala is shown on the road leading from St. Augustine to Fort Izart, also Silver Springs, Orange Springs and Palatka. The southern route from St. Augustine to Tallahassee shows a shortening of some distance. It no longer leads to St. Marks through the central part of Alachua County, but goes more directly northwest, cutting off a corner of Columbia County and passing through the southern part of Madison County and the central part of Jefferson County to Tallahassee.

A map of 1850, given in Shepherd's Atlas, calls the road from St. Augustine to Pensacola the old stage-coach road. It is probably at this stage of its



Victory Bridge spanning the Apalachicola River between Gadsden and Jackson Counties. Situated on one of the Historic Highways of Florida it is a majestic mass of modern concrete and steel—one of the largest and most beautiful bridges in the country.

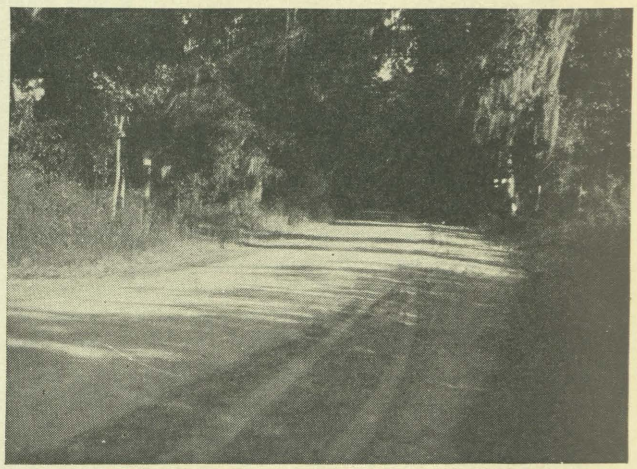
development that it is most interesting to us, because it stands for the period when travel of a more modern nature began. The mail was carried over this road from all points north, and all new-comers to the state, on horseback, in covered wagons, alone or in caravan style, or in the overland coach, came over the Florida border at one of the northern points mentioned above.

This cross-country highway was really more than a state road, it was a part of a great interstate route beginning at Savannah, Georgia, going south to St. Augustine, northwest to Tallahassee and the Alabama line, then southwest to Pensacola, west to Mobile, northeast to Montgomery, slightly northeast to Milledgeville, northeast to Charlotte, then to Richmond. Parts of it became military roads during the war between the states. An interesting chapter of this historic stage-coach road is a study of its early taverns and old town sites.

The modern Florida highways have followed rather faithfully the intricate Indian trails and Spanish bridle paths. Only now and then an old terminus has been dropped, or a detour made to shorten distance or include a new point of interest. But in the main the routes remain the same. They are going down to posterity as a heritage from one generation to another. No state can have a more significant monument to its past achievements than its roads.

If any of the old Spanish explorers, or early settlers coming down from Kentucky or Georgia or Virginia, who waded swamps and forded swift streams, should run across the beautiful Victory Bridge over the Apalachicola River they would think they had indeed reached the land of their dreams—the land of miracles.

Note: The writer has had at her disposal maps of Florida that have recently been placed in the library of the Florida State College for Women. They cover a period when the highways were the only accessible means of travel within the State. They date (excepting an old Spanish map) from 1826 to 1872—seventeen in number.



The Primitive and Winding Beauty of the Old Stage-Coach Road in many spots still remains unchanged.

TOWN OF RENO MOVED FROM RAILROAD TO CONCRETE ROAD

Reno, a small community six miles east of Paris, Texas, has reversed the time-honored custom of towns following the railroad. Reno has moved away from the railroad to the new concrete highway that runs east out of Paris.

This town of the Texas & Pacific railroad saw only four trains a day passing through it, while about one-half mile away a steady stream of traffic was passing over the concrete highway. So the town packed up all of its three business houses and moved over to the highway. Only a swimming pool was left at the old site.—Colorado Highways.

MORE FEDERAL AID

While Congress has established a record for doing the things they should not have done, and for leaving undone nearly everything they should have done, the cause of better highways was neither forgotten nor neglected.

In the Agricultural Appropriation bill, signed by President Coolidge on June 5, the Bureau of Public Roads is given $75,000,000 for Federal aid during the next fiscal year.

For forest roads and trails, an appropriation of $6,500,000 is available for the year ending June 30, 1925, but this sum has not yet been apportioned among the different states.

Since 1916, a total of $540,000,000 has been appropriated for Federal aid to states and counties. This year, for the first time, Hawaii is allowed to share in the benefits of government co-operation, her allotment being $365,625.

The Federal aid system, including seven per cent of the total road mileage in each state, covers approximately 170,000 miles of highways. The Bureau of Public Roads reports that 32,099 miles have been completed; 17,000 miles are under construction; and 2,518 miles have been approved and will be built during this season. It is estimated that about 60,000 miles of the system have been surfaced, leaving an annual program of 11,000 miles if the work is to be completed by 1934.—Idaho Highways and Public Works.

HERE'S WHY LEFT TIRES OUTLAST THOSE ON RIGHT

The fact that automobile tires on the right side of the car wear out more quickly than those on the left side is one which many motorists are unable to explain.

A popular misconception is that turning corners more frequently to the right than to the left is responsible for this wear. Such, however, is not the case.

The reason that tires on the right side wear more quickly is that they carry a greater load than their brothers on the left. The natural slope of the street or road causes more of the load to rest upon the right side of the car.

In addition, the natural tendency of the car to slide sideways because of the road slope must be counteracted more by the tires on the right than by those on the left.—The Golden Circle, North Shore Motor Club, Chicago.

Contracts Awarded by State Road Department from January 1, 1924, to July 12, 1924

Contractor	Proj. No.	County	Length Miles	Length Feet	Contract Cost + 10%	Type
Bryson Const. Co.....	598-A	Jefferson	9.45		$93,169.29	Sand-clay
Edgar Chapman	564-A	Charlotte.....	10.885		92,390.03	G. & D.
L. M. Gray.....	572	Bradford.....	7.00		96,765.59	Rock
L. M. Gray.....	607	Bradford.....	5.10		70,679.12	Rock
L. M. Gray.....	594	Bradford.....	9.10		117,132.35	Rock
Ed. Pettus	563	Osceola.....		315	12,062.60	Bridges
J. J. Johnston.....	562-A	Highlands.....		375	11,556.60	Bridges
Higgins Const. Co.....	36-A	St. Lucie.....		72	16,322.04	Conc. Bridge
Higgins Const. Co.....	620	St. Lucie.....		45	3,672.90	Timber Bridge
Boone & Wester.....	564-B	Charlotte.....		105	11,004.40	Timber Bridge
C. T. Dawkins.....	37-D	Alachua.....		60	31,552.40	Conc. Bridge
Ocala Lime Rock.....	575	Putnam.....	5.46		39,688.00	Rock
Boone & Wester.....	564-B	Charlotte.....	9.54		73,276.28	Surf.
Sou. Pav. & Const. Co....	44	Lake.....	10.529		395,611.38	Bit. Conc. Sur.
Barber-Fortin Co.....	625	Citrus.....	10.86		195,328.35	Rock
Barber-Fortin Co.....	626	Citrus.....	6.61		106,155.48	Rock
Sou. Pav. & Const. Co....	622	Lake.....	.215		8,217.80	Bit. Conc. Sur.
W. J. Conners.....	582	Okeechobee.....		3,122	177,941.61	Conc. & Steel
Weeks & Jackson.....	562-A	Highlands.....	5.37		29,110.62	Bartow Clay
Mickler & McLeod.....	629	Highlands.....	6.00		40,270.23	Bartow Clay
Myers Const. Co.....	630	Highlands.....	11.00		50,356.46	Marl
Ed Pettus	534	Brevard.....		765	28,846.40	Timber Bridge
Ed Pettus	601	St. Johns.....		480	22,994.18	Timber Bridge
			107.12	5,339	$1,724,104.11	

Notice

Getting out this magazine is no picnic. If we print jokes, folks say we are silly.

If we don't, they say we are too serious.

If we publish original matter, they say we lack variety.

If we publish things from other papers, we are too lazy to write.

If we don't print contributions, we don't show proper appreciation.

If we do print them, we are accused of filling up with junk.

Like as not some fellow will say we "swiped" this from an exchange.

So we did.

Oh, Wonderful Horse

O, horse, you are a wonderful thing; no buttons to push, no horn to honk; you start yourself, no clutch to slip, no spark to miss; no gears to strip; no license buying every year, with plates to screw on black and rear; no gas bills climbing up each day, stealing the life of joy away; no speed cop chugging in your rear, yelling summons in your ear.

Your inner tubes are all O. K. and thank the Lord they'll stay that way; your spark plugs never miss and fuss; your motor never makes us cuss. Your frame is good for many a mile, your body never changes style. Your wants are few and easy met; you've something on the auto yet.—Literary Digest.

ROADS

Whither leads this highway, little one?—
It runs just on and on, is never done.

Whither leads this highway, mistress fair?—
That goes to town, sir; to the village square.

Whither leads this highway, father old?—
To the white quiet of the churchyard fold.

—John Vance Cheney.

Another Vicious Circle

To get his wealth he spent his health,
And then with might and main
He turned around and spent his wealth
To get his health again.

—Boston Transcript.

Of all sad words of tongue or pen, the saddest are: "That damned old tire is flat again."—California Highways.

You Shall Judge Them by Their Roads

By R. M. HUBBARD, Chairman, State Highway Commission of Texas.

Just a few short years ago, the homeseeker would first make inquiry as to the acessibility of the churches and schools. Today his first question is, "What kind of a road do you have?"

History repeats itself. What of the community that years ago refused to encourage the building of railroads? Where is it today? Not only did it fail to attract new settlers, but its own citizenship removed to more progressive centers.

Today the community that fails to recognize the need and importance of improved highways, is treading on dangerous ground. It need not look for the acquisition of desirable settlers. They locate elsewhere. Land values instead of advancing, do not even remain stationary; they take a downward trend, as the lands become less and less in demand. The loan values shrink. Stagnation begins; decay sets in.

Evidence is already plentiful, that communities without adequate road facilities, not only fail to get new settlers, but that its own sons and daughters look for new locations, at the first opportunity afforded, and help swell the population, and increase the wealth of those communities that have realized the great importance and many advantages of paved roads.

A citizenship with a vision and alive to the necessity of constructing a system of good roads, does not do so merely for the financial gain alone. It takes into consideration as well, the religious, educational and social advantages that come to them and their families. As a financial investment, a well located and constructed road, takes rank among the best securities in the world, but above financial gain the people of Texas have always placed the church, the school and the home interests.

The benefits accruing to these from good roads, are almost incalculable. They cannot be measured in dollars and cents. A satisfied and contented citizenship is to be prized more highly than wealth by itself. The latter always follows in the wake of the former.—Texas Highway Bulletin.

THE ROMANCE OF ASPHALT

Seemingly little that is romantic is associated with asphalt but on finding numerous references to it in history, we realize that it had a most important bearing on the destiny of man.

Asphalt in ancient times was called pitch and we read in the sixth chapter, 14th verse of the Book of Genesis that Noah built his ark and "pitched it within and without with pitch" to protect himself and family from the predicted flood. Asphalt was used in the construction of Ninevah and Babylon to cement together the bricks and slabs of alabaster, and was obtained from deposits in the regions near the Dead and Adriatic Seas.

Asphalt was employed by the ancient Greeks and Romans in road-building. Cleopatra, the famous vampire, and other beauties of her day used asphalt to blacken their eyebrows; so after all the 1923 flapper with her eyebrow pencil is hundreds of years behind the times.

Within the last half-century, asphalt has been widely used for paving city streets and country roads; used in the construction of built-up roofs and floors for office buildings, factories and industrial plants; used for water-proofing subways and reservoirs and also used in the manufacture of asphalt shingles and prepared floorings.

Among the sources of asphalt are the famous Asphalt Lake of Trinidad in the British West Indies, and also in the Bermudez Asphalt Lake in Venezuela. These lakes are nature's own laboratories. They are called lakes because they consist of great expanses of a more or less mobile character and resemble in many ways similar expanses of water.

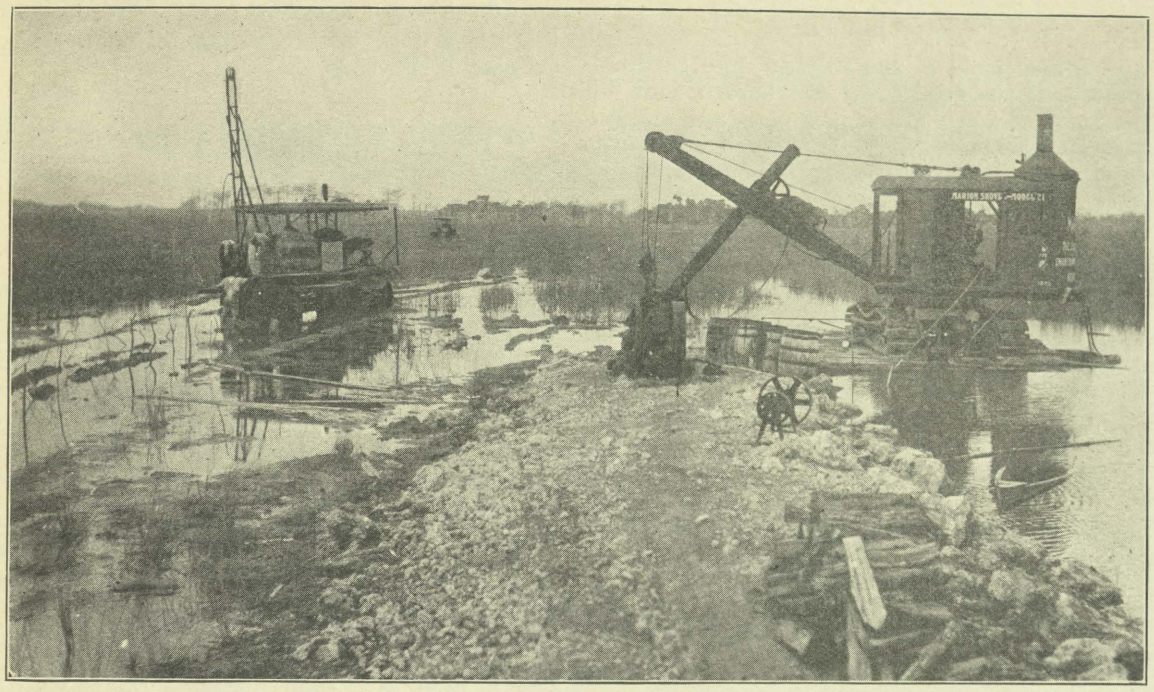
World-wide attention has been focused on Trinidad because of its great natural wonder. At first glance there is nothing impressive about the Asphalt Lake. It has an almost circular area of 114 acres and consists of a series of great folds, separated by channels filled with rain water which prevent their coalescence. The edges of the lake are grassy, but vegetation is lacking near the center. Shrubs and trees, known as islands, occur in a few places, and move from place to place due to the displacement of the asphalt which is in constant motion. The Carib Indians whom Columbus found on the island have woven a fantastic legend to account for the existence of the lake; namely, that the part of the island which is now the lake, was inhabited many years ago by a fierce tribe of Indians who killed many of the humming birds which were held sacred and regarded as the spirits of the departed. The Great Spirit, according to the legend, became enraged and caused the village occupied by the Indians to boil into molten pitch and the inhabitants perished to the last man.

Scientists, however, attribute the origin of the asphalt lake to petroleum springs far beneath the surface of the lake. They say that the pitch worked its way upward centuries ago, and came in contact with a huge mass of volcanic matter; the chief component of which is clay in a collodial form and the asphalt resulted.

In 1915 the borings were made to ascertain the depth of the Trinidad Asphalt Lake, but the drill which was sent down was bent and rendered useless by the movement of the asphalt at a depth of 175 feet, and no one knows the actual depth of the lake.

The asphalt is dug from the lake by West Indian negroes armed with broad-faced picks. It breaks in large chunks, weighing from 40 to 50 pounds, and is carried by natives to small cars and distributed on a narrow gauge railroad to the refinery nearby or to the pier where it is shipped to the United

(Continued on Page Ten)



DIFFICULTIES OF CONSTRUCTION ON THE TAMIAMI TRAIL.

The photographs on this page give an idea of the character of the construction of the Tamiami Trail in Monroe county as the same is being carried on by the Chevalier Corporation.

The top photograph shows on the left the Ingersoll-Rand air drill which opens up holes in the rock beneath the glades surface for the placing of dynamite. The rock is then blasted and is scooped up by the Marion steam shovel, shown on the right and deposited on the roadway.

The lower photograph shows a stretch of the road bed constructed in this manner.

The pictures were taken about 43 miles west of Miami.

THE ROMANCE OF ASPHALT.

(Continued from Page Eight)

States and other parts of the world. The railroad which runs over the surface of the lake is laid on palm tree ties; and because of the constant motion of the asphalt, the tracks become twisted and must be frequently inspected and straightened. When a quantity of asphalt is dug from the lake the cavity fills within a short time. It often occurs that the natives in a day's work make an excavation of approximately 700 cubic feet. However, on their return to work in the morning they find that the hole has disappeared and the space excavated has filled to approximately the level of the lake. In a few days all traces of the hole will have disappeared. At first it might seem as if this phenomenon might be due to new asphalt coming into the hole from some underground source, but we are told by geologists that the excavation is filled by the very slow settling or levelling of the entire surface of the lake. Since 1888, four million five hundred thousand tons of asphalt have been removed from the Trinidad Asphalt Lake, and the level of the lake has dropped several feet, but the supply of asphalt, nevertheless, is apparently inexhaustible.

ROAD MAINTENANCE DEVELOPMENTS

After traveling some thirty-five hundred miles in motor cars and buses on an inspection trip of all sorts of roads in eight states, one is more convincingly impressed with the good maintenance work that is being done on low-type roads. It is evident that there has been no sudden revolution in methods. The best ways of keeping roads in serviceable condition have instead been evolved slowly by experience and trial. They are thus well founded on bases that insure the best results for the money spent.

The hard maintenance problems are of course presented by medium to heavy traffic on low-type roads. As a result of methods that have been developed in recent years, such roads are being kept in good serviceable condition in several states at costs that are surprisingly low. In fact, up to the critical limit of the volume of traffic such roads can carry, the excellent condition in which low-type surfaces are maintained in these states is a great tribute to the officials in charge.

The upkeep of each road is, however, an individual problem. Indeed, a single mile will often present several distinct problems. There is, therefore, no general solution for all maintenance problems, nor even for any one type of surface. Two features do stand out, however, as indicating general application to all maintenance work. One of these is the necessity for constant attention. The other is the reduction of hand labor to an irreducible minimum by the use of machines.

Traveling along in a motor car at good speed the impression easily is gained that the maintenance units are close together and that the expense must be proportionately high. A study of the annual costs per mile shows, however, costs that are gratifyingly low. The answer is that the units are constantly on the move on the road and that each covers an astonishing amount of surface, thereby reducing the average cost with each mile of improved road.—Successful Methods.

UNUSUAL MATERIALS USED FOR ROADS

Most people hope that they will make the "long journey" over roads that, according to the Biblical record, are paved with gold. Some of them, however, may find that they are, instead, bumping over the eternal highways that according to a widely accepted tradition are "paved with good intentions." Before the long journey there is the chance that many will pass over roads made with other kinds of unusual materials. The shell roads of Florida are familiar to all. Some roads in the Gulf region of Texas are made of rock brought in as ballast from distant South American ports, a proceeding made possible by the scarcity of rock of all kinds in the coastal plains and the loading requirements of the vessels engaged in the transport of bulky lightweight products. In some sections of Iowa where there are no surface exposures of rock, partly baked clay is used as a fair substitute for the regulation road materials. Along the Great Lakes, American citizens often find themselves traveling on foreign soil though still within their own country, for vast amounts of rock for roads is cheaply supplied from Canadian quarries on the upper Great Lakes for American needs. In the West it is not unusual to find that some of the roads in the vicinity of the mining camps are made of waste rock and waste mill tailing from the mines which contain precious base metals which today would constitute commercial ore. In this case the streets are literally "paved with gold" or gold ore. Some years ago a casual work train coming into Mexico City from one of the lines then in construction between the Mexican capitol and Vera Cruz brought in some rock to pave the marshy area about the new station. Several years after this rock was accidentally found by an American assayer to be gold ore of high value and was removed and milled by him on an arrangement to replace with less valuable but equally as good material. Incidentally the location from which the gold bearing rock had come has not to this day been discovered. Part of the naval base yards at Norfolk, Va., is paved with mine rock from the Virgilina mining district in North Carolina on the border of Virginia, which under ordinary conditions would be profitable copper ore. This was hastily brought to the naval base during the great war as part of the emergency preparations of the Government. Many of the mines in Southern Missouri and in Southeastern Wisconsin are made of the waste of the zinc and lead ores of the local regions used at a time when the methods of treating the ores were crude and wasteful. In the early days of mining in the Wisconsin district, the form of zinc ore known as "dry bone" (zinc carbonate) had no value because there was no commercial means of treating it. This was often used for roads and in later years was retrieved and marketed. The good old standby of the pioneers—the "corduroy" roads made of cross-

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Florida's Centennial

All roads will lead to Tallahassee in November, 1924; for at that time Tallahassee in particular, and all of Florida in general, will celebrate the one hundredth anniversary of the meeting of the first legislative council for Florida as a territory. This year is the Centennial of Florida's first organized, democratic government.

Only one road led towards Tallahassee in November, 1824, and that was the old road from St. Augustine to St. Marks, and at that time the only road in Florida. Over that road some of the pioneer legislators of a territory which was to become a great state in a great union jogged on horseback to assemble in the log house which was their capitol. A very early act of Congress was to appropriate $23,000 for a main highway through Tallahassee.

This year the roads that lead to Tallahassee and the city are accessible from every portion of Florida and the United States. They will be traveled by motorists, assembling at Tallahassee for the purpose of commemorating that meeting of a hundred years ago and celebrating the great progress which has been made during the century.

This progress can not be better exemplified than in the increase in roads and the interest in roads which has taken place in the State since the time when the old St. Augustine-St. Marks road was the only one in Florida. That historic highway no longer exists but as The Spanish Trail is part of it, it is one of many excellent, hard-surfaced roads that enter the city from every direction.

Tallahassee is no exception in this matter. Each city and town in Florida is becoming easily accessible to every other and the efforts of the State Road Department and the counties are rapidly making this true of even the most remote villages and hamlets. The day fast approaches when it can be said that all Florida lies on the same highway.

The great progress of the State in road building has been equalled by its progress in government, industry, education, agriculture, horticulture and husbandry. An important part of the Centennial Celebration will be exhibits which will visualize and emphasize this progress and the State Road Department may consider the preparation of an exhibit which will be a comprehensive survey of a century of road building in Florida.

Nothing New Under the Sun

Pennsylvania was one of the first states to require automobile registration. Visitors from other states were not pleased when they crossed the line. Read this letter from C. W. Barker of Norfolk, Conn.

"Replying to your circular regarding the renewal of automobile license for 1907, my visit to your state last year was unavoidable, otherwise, I should not have taken out a license in 1906. Unless compelled by circumstances to repeat the conditions of 1906 I shall not enter your state or spend another dollar there, even in a business way, until you can welcome automobiles instead of gulling and grafting on them as the present laws of your state uphold.

"Pennsylvania claims to be the birthplace of American liberty, but it has evidently forgotten this or it would not stoop so low as to extort money from its neighbors in this manner. In the automobile license law your state and New Jersey have exceeded the bounds of common decency.

"Like every other loyal and civilized community, Connecticut will welcome your automobile parties and every other reputable class of citizens that may desire to visit them.

"Pennsylvania and New Jersey are too narrow-minded to be considered as belonging to the American Republic. It is not the three dollars for the license that outsiders mind so much as the un-American principles and the duping and graft such a law invites."

It wasn't long, of course, before Connecticut "joined the vultures" and laid an automobile license fee on owners and operators of motor vehicles.

A Washington (D. C.), man wrote the following in June of 1909:

"For the fourth time I pay $5.00 an hour for the privilege of passing through a corner of Pennsylvania. Had it not been for this petty graft I might have tarried long enough to spend a few hundred with your merchants, instead of clamping my purse and hiking onward away from a $3.00 per thievery that the 'Barons' of the 13th century would have never tolerated, though they exacted heavy toll from every unprotected caravan. Compliments of a disgusted victim." Thomas Hinds.

Display of license tags on motor bicycles was galling to some citizens. In the forepart of 1906 a Palmyra physician sent this letter to Joseph W. Hunter, then Highway Commissioner:

"Please accept my thanks for the two pieces of armor plate which you choose to call 'license number tags.' If they could be displayed on a motor bicycle I am sure they would protect me from the cows jumping on and biting me. It can be easily seen that those cast iron plates canot be carried on a motor-cycle according to your rules. I am also certain that the Assembly did not have the harmless motor-cycle in mind at all when they passed the act and the man that constructed the law in that way should reconsider and then let his conscience kick him."

And a well-known Erie man grew very sarcastic over the law requiring tags on motor-cycles. In January, 1906, he wrote:

"I am guilty of owning a motor-cycle. What must

(Continued on Page Twenty-three)

Unique Plan to Stimulate Road Enthusiasm

One of the cleverest bits of road "propaganda" which has come under our observation in a long time was executed recently in Sarasota County, in the nature of a clever stunt. The following graphic account is taken from a recent story in the Florida Times-Union:

Willis Powell Pulls Good Stunt on Bad Roads in Sarasota

Sarasota, June 22.—It was about twelve o'clock Friday when a dilapidated flivver, covered with mud, and drawn by a spavined mule attached by some twenty odd feet of rope, limped along Main street. At the steering wheel sat a whiskered agriculturist, chewing viciously at a straw and giving orders to a colored boy who bestrode the mule. In the car lay a heap of badly withered corn in the ear, decayed tomatoes and other tired vegetables.

As they neared Five Points, Paul Thompson, the grocer, ran out and began calling down the farmer man for being so far behind in his delivery. His language was rude and without tact. The purveyor of vitamines started in by apologizing. Said he had started from Miakka a week ago but the roads were so bad that he had ruined his car, slept along the road nights, been bitten by mosquitoes and had to eat a part of his load of vegetables. He grew indignant as he rehearsed his woes and announced that he would be ding blammed if he drove over the road again. "I don't care if your toorists have to eat hay, if this county don't give better roads I'm thoo," was his ultimatum.

It was about then that Bryan Pemberton, the insurance man, hove in view. Bryan is a pacifist and next to writing a policy loves to pour oil on troubled waters. "My dear man," he said to the troubled turnip grower, "we are having a meeting down at the Kiwanis to try and do something about these roads. Come on down and let the club see what the Miakka road did to your car."

So the whole assemblage, now some half hundred or more persons, moved down to the DeMarcey restaurant, where the Kiwanis had just sat down to the weekly luncheon. Willis Powell was presiding and the subject under discussion was the coming election for a bond issue of a million dollars for road betterment. The farmer was brought in and rehearsed his troubles. Then, removing his straw thatch, he sat down with his fellow Kiwanians and ate his dinner. Then the farmer was recognized as Voltaire Sturgis. The whole affair had been staged by Powell as a part of the good roads campaign and it was very effective.

Frank Whitman of the Florida Grower, Earl Brown, secretary of the Chamber of Commerce of DeLand and W. A. Manning of the Bradentown Board of Trade were among the guests of the day.

ROADS

"Roads are literally the pathways not only of industry, but of social and national intercourse. Wherever a line of communication between men is formed, it renders commerce practicable; and, wherever commerce penetrates, it creates a civilization and leaves a history."—Smile's Life of Metcalf and Telford.

At a special session of the county commissioners Monday bids were opened for the Tavares-Eustis road, and the contract was let to Cecil R. Scott Company for $58,047.22. The road will be constructed of asphaltic concrete, with lime rock base. Work will commence in ten days, and the contract calls for the project to be completed in four months. —Tavares Citizen.

Pan American Road Organization Seen as Result of Tour

DELEGATES FROM NINETEEN LATIN AMERICAN NATIONS FORM INTERNATIONAL BODY LIKE HIGHWAY EDUCATION BOARD

Visitors Conclude Four Weeks Study of Highway Transport in U. S.—To Hold Pan American Road Congress

Washington, D. C., July 26.—(Special)—With a complete picture of highway transport conditions in the United States as a background for their action, delegates to the Pan American Highway Commission are sailing for their respective countries this week after organizing the Pan American Confederation for Highway Education, and formulating a tentative program for the first Pan American Highway Congress to be held in Buenos Aires next spring.

In each of the nineteen Latin American nations represented on the tour will be formed a "Federacion Nacional de Educacion Vial," a body patterned after the Highway Education Board of the United States, the parent organization. These "Federacions" are united in the Pan American Confederation for Highway Education. In the opinion of those participating in its organization there is thus formed an international organization destined to have a far-reaching effect upon transportation facilities of the American continent, and a foundation upon which the structure of continued friendly relations can be even more firmly established.

The organization of the Confederation was the final official act of the delegates, who previously had submitted to Dr. Leo S. Rowe, Director General of the Pan American Union, a tentative program for the first Pan American Highway Congress. Dr. Rowe, Thomas H. MacDonald, Chief of the U. S. Bureau of Public Roads, J. Walter Drake, Assistant Secretary of the Department of Commerce, and other high government officials express the opinion that the entire trip of the Commission has resulted in a great stimulus to highway transport activities, both in this country and in those represented by delegates.

The Commission closed its work in this country with a series of conferences in Washington, after traveling more than 4,000 miles in ten states, inspecting the highways of North Carolina, Kentucky, Illinois, Minnesota, Wisconsin, Michigan, Ohio, New York, Pennsylvania, and New Jersey. Fully half of the mileage covered was by automobile or motor bus, while the tour itself was marked by expressions of the most cordial sentiments by officials and the public at large for the Latin American nations represented. The tour was under the auspices of the Highway Education Board, of which Dr. J. J. Tigert, United States Commissioner of Education, is chairman. It lasted thirty-one days.

Fifty-five persons comprised the official party, thirty-seven of them being representatives of nineteen Latin American nations. Under a committee on arrangements consisting of Roy D. Chapin, chairman, Fred I. Kent and W. A. Beatty, the direction of the trip was given to S. T. Henry of New York, who has had much experience in Latin American affairs, and who also has wide business and personal contacts in this country.

Delegates showed perhaps the keenest interest in the construction of low type roads, such as gravel and sand clay, but they also were given an opportunity to witness the actual construction of hard-surfaced highways, such as concrete and asphalt. It was held by the visitors, however, that the immediate demands of their respective countries are for serviceable roads, which can be brought to a higher state of development later as traffic demands increase.

Not only were the Latin Americans shown all phases of highway transport and the several types of highway construction, but leading educational institutions of the country were visited so they might see the preparations being made to train men of the highest calibre to administer highway affairs of this country.

In the large factories of Michigan, Ohio, Illinois and elsewhere they glimpsed the manufacture of the automotive vehicle, rubber tires, machinery and accessories during the latter portion of the tour, thus completing the highway transport picture of this nation. The closest study was given to the economic aspects of highway transportation, especially with reference to the development of rural communities.

The purpose of the Pan American Confederation for Highway Education, according to the constitution of this organization, is "the study and promulgation in the different countries constituting the Pan American Union of fundamental principles that contribute to the development of adequate highways," and with the achievements of the United States as an example, each of the delegates, according to formal expressions, returns to his native country to further that object.

FLORIDA HIGHWAYS WILL CARRY THE MINUTES OF THE JULY QUARTERLY MEETING OF THE DEPARTMENT IN ITS NEXT (SEPTEMBER) ISSUE.

Highway Bond Issues Are Only a Small Part of Total Debt

By HENRY R. TRUMBOWER, Economist, U. S. Bureau of Public Roads, in the Highway Engineer and Contractor

The attention of the public has frequently been called to the amount of outstanding bonds which the states and their several subdivisions have issued from time to time to meet public expenditures. It has been intimated that a very substantial part of this public indebtedness consists of bonds issued to meet the costs of highway construction and improvements. An inquiry made by the U. S. Bureau of Public Roads into the financial status of our rural highways and the recent reports of the U. S. Census Bureau relative to state and local taxes and public indebtedness furnish the basis for a determination of the facts. An examination and analysis of these data prepared by governmental agencies show that for the country as a whole the indebtedness incurred on account of rural highway expenditures accounts for but a small part of the public indebtedness to which the states and their subdivisions have obligated themselves.

At the end of 1921 the total amount of highway bonds outstanding was $1,222,312,300. Of the whole issue 72% are represented by local bonds, the obligations of counties, townships and districts; 28% are the obligations of state governments, as shown by the following table:

	Amount.	Per Cent.
State bonds	$ 345,574,100	28
Local bonds	876,738,200	72
Total	$1,222,312,300	100

There are only two states in the whole country which have no highway bonds of any kind outstanding, state or local. These are North Dakota and Vermont. All the other states have local bonds outstanding, with the exception of Colorado, which has issued state highway bonds but has no local bonds issued for that purpose.

Over half of the states, 27 in number, have no state highway bonds outstanding. These states are:

Alabama	Kentucky	Ohio
Arizona	Louisiana	Oklahoma
Arkansas	Minnesota	South Carolina
Connecticut	Mississippi	Tennessee
Florida	Missouri	Texas
Georgia	Montana	Vermont
Indiana	Nebraska	Virginia
Iowa	New Jersey	Washington
Kansas	North Dakota	Wisconsin

New York has the largest issue outstanding, both state and local, amounting to $121,681,100; California is a close second with $101,258,000.

Comparison of Highway Bonds and Total Indebtedness

The U. S. Census Bureau has reported the total amount of bonds issued for all purposes by states, counties and all other subdivisions (including cities, villages, townships and school districts). For the year 1922, which is the closest information which can be compared with the highway indebtedness, the total indebtedness, less the sinking fund assets set aside to meet such debts, was $8,695,906,000. This total indebtedness, which may be regarded as the net amount, is divided as follows:

	Amount.	Per Cent.
State	$ 936,414,000	10.5
Counties	1,255,226,000	14.5
All other subdivisions	6,504,266,000	75.0
Total	$8,695,906,000	100.0

It will be observed that by far the major part of this total debt, or 75%, is the obligation of cities, villages, townships and school and other districts; the state and county share was but 25%.

In order to make a closer comparison with the indebtedness for highway purposes, the debt of the counties and all other subdivisions, amounting to $7,759,492,000, may be called local. The direct comparison follows:

	Total Debt.	Highway Bonds Amount.	Highway Bonds Per Cent of Total Debt.
State	$ 936,414,000	$ 345,574,100	37.0
Local	7,759,492,000	876,738,200	11.0
Total	$8,695,906,000	$1,222,312,300	14.0

According to this it is shown that the total highway bonds of the country amounted to 14% of the total indebtedness of the states, counties and other political subdivisions.

At the end of the fiscal year June 30, 1923, the debt of the Federal Government was $22,525,773,000. Adding to this amount the state and local indebtedness we get $31,221,679,000 as the total indebtedness of the country. Of this amount $1,222,312,300 was represented by highway bonds, or 3.9%.

A comparison of the amount of highway bonds outstanding and the total debts of states and their local subdivisions is presented below, according to geographic divisions and states:

	Total Debt.	Highway Bonds Amount.	Highway Bonds Per Cent of Total Debt.
NEW ENGLAND STATES			
Maine	$ 42 457,000	$ 6,439,300	15.2
New Hampshire	16,604,000	570,100	3.4
Vermont	11,994,000	.....	...
Massachusetts	326.245,000	26,820,800	8.2
Rhode Island	49,893,000	2,952,000	5.9
Connecticut	100,954,000	400,000*	0.4
Total	$ 548,147,000	$ 37,182,200	6.8

MIDDLE ATLANTIC STATES.			
New York	$1,683,820,000	$ 121,681,100	7.2
New Jersey	382,001,000	25,833,000	6.7
Pennsylvania	550,365,000	50,000,000†	9.1
Total	$2,616,186,000	$ 197,514,100	7.5
EAST NORTH CENTRAL STATES.			
Ohio	$ 670,338,000	$ 70,936,500	10.4
Indiana	152,840,000	62,415,900	41.0
Illinois	364,019,000	20,617,300	5.6
Michigan	361,779,000	55,234,200	15.3
Wisconsin	104,523,000	10,201,600	9.8
Total	$1,653,499,000	$ 219,405,500	13.3
NORTH CENTRAL STATES.			
Minnesota	$ 269,607,000	$ 21,402,600	8.0
Iowa	151,911,000	25,677,800	16.8
Missouri	118,276,000	14,942,600	12.6
North Dakota	40,266,000	.....	...
South Dakota	50,554,000	3,649,000	7.2
Nebraska	97,819,000	2,848,000	2.9
Kansas	123,470,000	9,182,400	7.4
Total	$ 851,903,000	$ 77,702,400	9.1
SOUTH ATLANTIC STATES.			
Delaware	$ 22,453,000	$ 7,144,000	31.8
Maryland	120,954,000	18,212,900	15.2
Virginia	119,494,000	14,936,300	12.5
West Virginia	70,512,000	37,727,900	53.5
North Carolina	182,711,000	55,808,500	30.6
South Carolina	65,010,000	13,081,000	20.0
Georgia	64,045,000	15,659,000	24.4
Florida	98,243,000	24,130,200	24.6
Total	$ 743,422,000	$ 186,699,800	25.1
EAST SOUTH CENTRAL STATES.			
Kentucky	$ 50,324,000	$ 7,135,800	14.2
Tennessee	142,159,000	28,693,500	20.2
Alabama	75,189,000	8,758,500	11.6
Mississippi	111,499,000	37,912,400	34.0
Total	$ 379,171,000	$ 82,500,200	21.8
WEST SOUTH CENTRAL STATES.			
Arkansas	$ 91,279,000	$ 50,955,700	55.7
Louisiana	126,946,000	28,571,400	22.5
Oklahoma	129,977,000	11,547,600	8.9
Texas	356,342,000	96,517,900	27.1
Total	$ 704,544,000	$ 187,592,600	26.6
MOUNTAIN STATES.			
Montana	$ 65,229,000	$ 9,775,800	14.9
Idaho	61,693,000	19,772,200	32.0
Wyoming	19,128,000	3,745,000	19.6
Colorado	99,645,000	2,000,000	2.1
New Mexico	25,010,000	2,001,100	8.0
Arizona	44,937,000	18,501,000	41.2
Utah	50,041,000	11,785,200	23.6
Nevada	7,861,000	1,438,000	18.3
Total	$ 373,580,000	$ 69,018,300	18.5
PACIFIC STATES.			
Washington	$ 169,063,000	$ 20,547,900	12.1
Oregon	137,177,000	42,891,300	31.2
California	519,214,000	101,258,000	19.5
Total	$ 825,454,000	$ 164,697,200	19.8
RECAPITULATION.			
New England States	$ 548,147,000	$ 37,182,200	6.8
Middle Atlantic States	2,616,186,000	197,514,100	7.5
East North Central States	1,653,499,000	219,405,500	13.3
West North Central States	851,903,000	77,702,400	9.1
South Atlantic States	743,422,000	186,699,800	25.1
East South Central States	379,171,000	82,500,200	21.8
West South Central States	704,544,000	187,592,600	26.6
Mountain States	373,580,000	69,018,300	18.5
Pacific States	825,454,000	164,697,200	19.8
Total	$8,695,906,000	$1,222,312,300	14.0

* Complete data not available.
† No data for local bonds.

EDITOR'S NOTE.—The amounts shown opposite Florida in the above tables, refer of course only to local issues. The only state bonds are a small issue of $601,567.00 owned by the State School Funds. So that Florida has no outstanding bonded indebtedness of any sort.

"ROAD TO HAPPINESS"

"The Road to Happiness," a highway film produced jointly by the Ford Motor Company and the National Automobile Chamber of Commerce, representing the entire motor vehicle industry, and the Highway Education Board has just been released for distribution. The picture was made with the advice and guidance of the Bureau of Public Roads, United States Department of Agriculture.

President Coolidge, who is a strong believer in the value of road improvement, appears as one of the principal characters in his proper role as President of the United States.

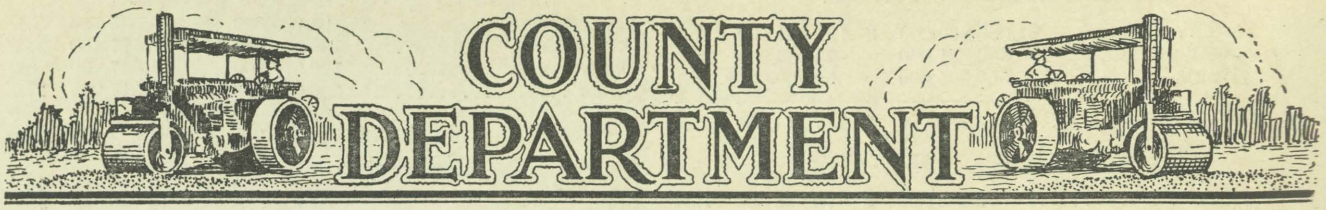
The story has to do with the life of a farm lad reared in an old farm home on a mud road, surrounded by all the handicaps, difficulties and discouragements attendant upon such an environment.

As the result of an essay contest for a four-year scholarship prize offered through the Highway Education Board the boy who wins the contest obtains the chance for a college education. He becomes a highway engineer and is privileged to bring about such changes in the condition of the roads of his home community that even the most skeptical opponents of road improvement are brought to a realization of the truth of the maxim which forms the moral of the picture that "we pay for improved roads whether we have them or not, and we pay less if we have them than if we have not."

The film is distributed by the Ford Motor Company through its numerous branches and is available for use in schools and at public meetings without other charge than the cost of transportation. Full information in regard to the film can be obtained from the Ford Motor Company, the National Automobile Chamber of Commerce, the Highway Education Board or the United States Bureau of Public Roads.

R. A. Paddock, who left Monday for his northern home, wrote from Tifton, Ga.: "Drove up here from Leesburg today, 250 miles. The roads are fine, about 90 per cent perfect; no real bad stretches. Two detours of about one mile each via Ocala, Gainesville, Lake City and Valdosta. Hundred miles from here to Macon said to be good."—Leesburg Commercial.

State road builders will be given 1,500 tractors and 3,500 trucks now held as surplus by the war department under the provisions of a bill which passed the house today. The agricultural department will distribute the machinery.—Lynn Haven Citizen.



Progress of Road Construction in the Counties, as Gleaned From the Press

The Safety Harbor bridge approach work is finished and the contractor has moved away, bag and baggage. The rock base is now down as far as the railroad between Rex Cafe and the bridge. All moving along without any mishaps it is probable the rock base will be thrown open for traffic within the next ten days and will be open for at least two weeks and possibly a month before the brick and blocks will be laid. By that time possibly the Gandy bridge will be open and then why not have a joint celebration.—Safety Harbor Herald.

The county road crew are busy in this section finishing up a program of much-needed improvements. The road along the east shore of the south fork from the Poppleton creek bridge to the Palm City bridge has been rocked and rolled and is in good shape, ready for oiling. A two-foot shoulder has been added to the Dixie Highway from the east end of Avenue E to the bridge. East Fourth street has been widened to twelve feet from the school house to the town limits, and the county road on the east town limits has been continued across the railroad just above the ball field, an improvement much needed to accommodate the baseball fans.—Stuart Messenger.

Final work on the surfacing of the east portion of Royal Palm bridge roadway will start today. The Keystone Construction Company has a large roller and scarifier on the bridge for the scarifying and rolling of that portion of the bridge. Crushed rock for the draw span and sand for the final oiling are already hauled. There are two strips of concrete at each end of the bridge to be poured. The constructors think the bridge will not be closed more than three or four days for the final applications. The draw is reported to have been swung and balanced. A man from the Westinghouse Company has been here giving attention to the motors that supply electric control for the drawer. The gates to be used at the draw are also being constructed. The wooden bridge used so long in crossing at the east side of the old draw is now being torn down and general cleaning up of the lake going on.—Palm Beach Times.

The county road crews are at work on Avocado Drive this week, completing the clearing and rocking the surface. The clearing crew is at work on the east end of Kings Highway, from the railroad past the Ransom grove. They will clear and finish this road for a distance of about a mile and a half.—Homestead Enterprise.

Marion county's road bonds authorized by the election in June for $1,500,000 were sold by the board of county commissioners today to Stanahan, Harris & Oates, Inc., Seasongood & Mayer and the Providence Savings and Trust Company, for $1,452,450. After the sealed bids were opened and it was found that the highest bid made was $1,443,000, the board put them up to the highest open bidder in accordance with the plan authorized by the resolution under which the bonds were to be sold, with the above result.—Ocala Star.

Feeling that the need is urgent for widening Lake Worth road, which runs through the farming region west of town, before the truck season opens this fall, farmers living along the road have united with the board of trade in calling a public meeting for Friday night at 8 o'clock in the town auditorium to discuss the subject. Movement to widen the road has been agitated for some time and promise was made last winter by Commissioner R. L. McCarley of West Palm Beach, who represents this district on the board of county commissioners, that he would arrange for the work to be done this summer.—Lake Worth Herald.

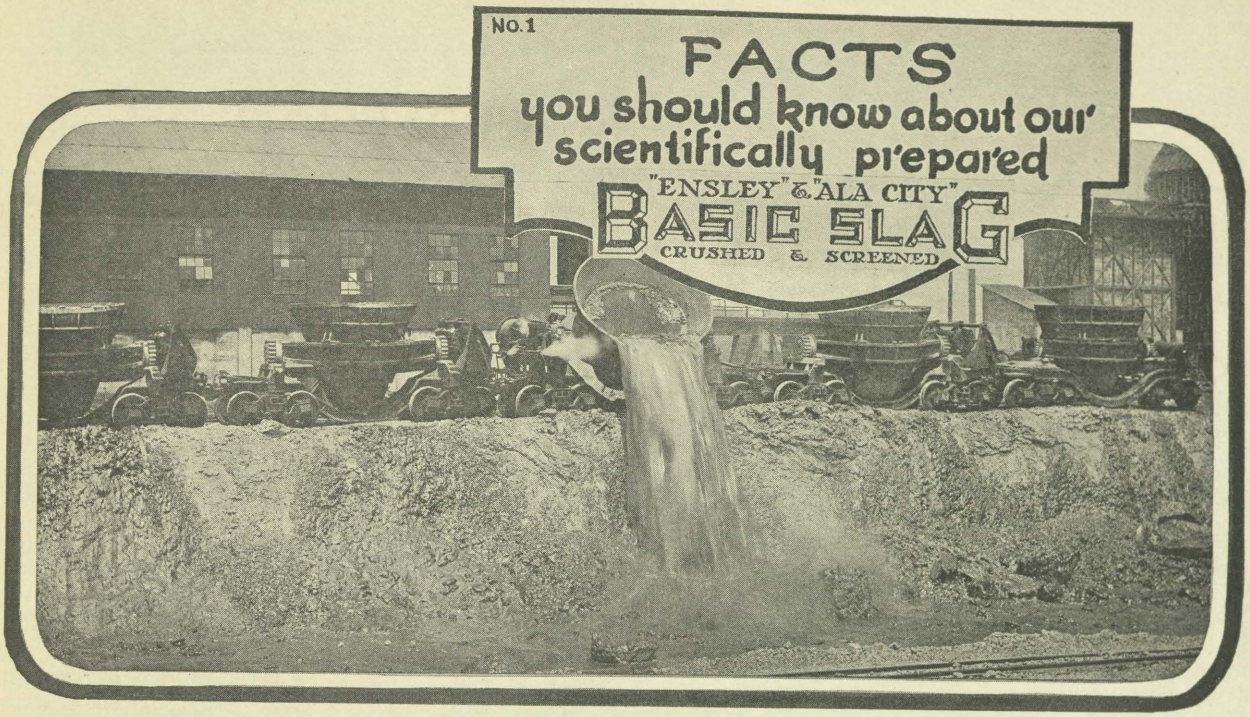
Two County Districts Vote $1,150,000

Bartow, Fla.—Two road and bridge districts of Polk county have voted bond issues aggregating $1,150,000 for the construction of hard-surfaced roads. District No. 8 has voted $600,000 for rebuilding 31 miles of road in the phosphate belt of the county and for constructing bridges over the north branch of the Alafia River.

A bond issue of $500,000 has been voted in District No. 8 for the construction of 45 miles of asphalt and clay roads, 15 feet wide. This district extends from Waverly on the south to Haines City and north through Davenport and Loughman, as far west as Polk City, embracing a highly developed and productive territory.—Manufacturers Record.

Polk County Receives Bids on 42 Miles.

The Board of Commissioners of Polk County received bids on July 21st at its office in Bartow for the construction of approximately 42 miles of road, together with a number of culverts and bridges, in special road and bridge district No. 3. The roads will be of asphalt construction on a base of Bartow clay or Florida lime rock.



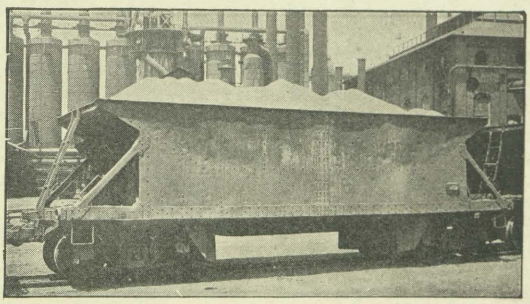
Pure molten Slag—*free from all dry refuse*—

being poured at Ensley into our modified pits

The pure molten slag is carried from the furnaces, 1000 ft. away, in hot pots and poured by the T. C. I. & R. R. Co. (U. S. Steel) under our direction into modified pits—dry slag canals.

Blast Furnace Slag is scientifically handled in this manner only at two points in the South —at Ensley, Ala., on the property of the T. C. I. & R. R. Co., where "Ensley Basic Slag" is produced and at Alabama City, Ala., on the property of the Gulf States Steel Co., where "Alabama City Basic Slag" is produced. Incidentally at these points, and by these two steel corporations only, is Basic Slag produced.

The railroad car above is filled with downcomer dust, brickbats and other dry refuse which accumulates daily from the six blast furnaces at Ensley. Prior to 1912—year we started to crush and screen slag—all of this "foreign" material was dumped with the Slag. It all went into the slag pile together.



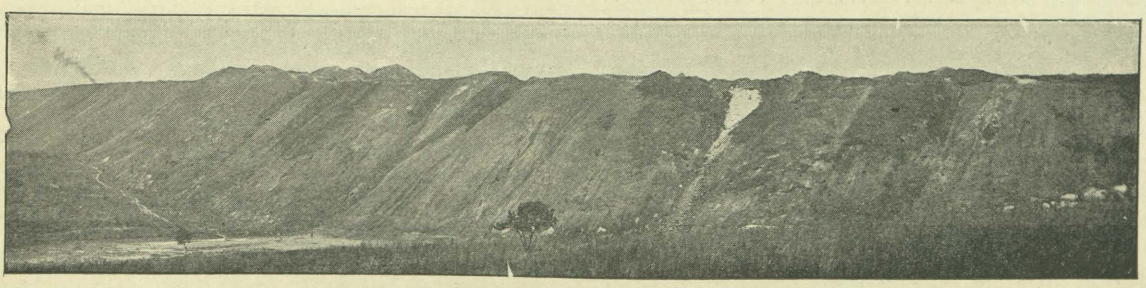
Now the dry refuse is dumped separately. The car you see is one in a train of eight on its way to that mountain, in the lower picture, which is two miles west of the blast furnaces. More than two million tons of downcomer dust, brickbats and other dry refuse in this giant pile have accumulated since 1912.

Our next statement, "Why Slag is poured into modified pits" will appear shortly in this magazine.

Birmingham Slag Company

Slag Headquarters for the South

ATLANTA **BIRMINGHAM** THOMASVILLE



Status of Road Construction

DATE MAY, 1924

Project No.	Contractor	Road No.	County	Total Length Miles	Clearing Miles	Grading Miles	Base Miles	Surface Miles	Type	Per Cent Complete
18	Morgan-Hill Paving Co.	3	Putnam	12.80	12.80	12.66	12.80	12.80	B.M.	99.48
27-B	C. F. Lytle	2	Columbia	6.68	6.68	6.68	....	6.68	C.	100.00
32	State Forces	4	Nassau	10.00	10.00	10.00	10.00	9.60	B.M.	97.80
34	Union Indemnity Co.	7	Escambia	10.00	10.00	9.80	....	8.00	C.	81.00
35	Hancock Brothers	1	Escambia	5.00	5.00	5.00	....	5.00	C.	100.00
36-A	H. L. Clark & Sons	4	St. Lucie	7.76	7.76	7.37	7.37	4.27	B.M.	78.50
36-B	C. F. Lytle	4	St. Lucie	7.12	7.12	6.41	....	0.00	C.	12.50
37-A	F. W. Long & Co.	2	Alachua	.70	.63	.63	0.00	0.00	S.A.	21.00
37-C	F. W. Long & Co	2	Alachua	3.26	3.19	3.19	1.79	0.00	S.A.	47.00
37-D	Fla. Drain. & Const. Co.	2	Alachua	2.14	....	.30	....	....	G.	14.00
37-E	Wm. P. McDonald Const. Co	2	Alachua	7.96	7.64	7.56	6.30	2.30	S.A.	61.60
40-A	C. F. Lytle	4	Brevard	16.17	8.08	.32	0.00	....	R.	5.00
40-D	J. Y. Wilson	4	Brevard	6.72	2.35	1.27	0.00	....	R.	4.00
40-E	Langston Const. Co.	4	Brevard	13.60	4.62	2.85	0.00	....	R.	4.80
501	State Forces	6	Calhoun	41.19	41.19	39.94	....	37.07	S.C.	98.50
503	State Forces	2	Charlotte	20.18	20.18	20.18	....	19.17	S.C.	97.00
505	State Forces	2	Columbia	11.80	11.80	11.80	11.56	.59	R.(S.T.)	89.00
507	The Barber-Fortin Co.	4	Flagler-Volusia	10.00	10.00	10.00	10.00	9.00	R.(S.T.)	95.00
519	State Forces	5	Manatee	3.50	3.50	3.15	3.50	0.00	B.M.	82.00
521	Morgan-Hill Paving Co.	4	Nassau	12.41	4.40	2.48	0.00	....	R.	7.80
523	M. J. Cole (Co. Funds)	8	Okeechobee	8.75	8.75	7.00	7.26	....	R.	82.75
532	State Forces	3	Volusia	18.90	18.90	18.90	18.90	11.34	B.M.	85.00
534-A	J. D. Donahoo & Sons	24	Brevard	2.65	2.65	1.32	0.00	....	R.	49.00
534-B	Noll & Noll	24	Brevard	11.85	11.85	11.85	6.87	....	R.	57.00
538	State Forces	2	Marion	10.92	10.92	10.92	10.92	10.92	R.(S.T.)	100.00
539	County Forces	5	Marion	11.30	11.30	11.30	6.21	0.00	R.(S.T.)	41.16
544-A	F. S. Whitney	5	Pasco	8.75	8.75	8.66	4.37	....	R.	51.27
544-B	The Barber-Fortin Co.	5	Pasco	11.33	10.62	6.45	.34	....	R.	22.50
545	Broadbent & Groeting	5	Hernando	9.51	9.51	8.56	4.37	0.00	S.A.	38.00
553	State Forces	2	Marion	9.15	9.15	9.15	4.94	0.00	B.M.	39.70
554	The Barber-Fortin Co.	4	Brevard	5.00	5.00	5.00	4.98	....	R.	99.00
560	State Forces	6	Calhoun	20.00	16.00	14.00	....	14.00	S.C.	68.00
562-A	Southern Surety Co.	8	Highlands	5.37	5.37	5.37	....	....	G.	100.00
562-B	W. P. Kennedy Const. Co.	8	Highlands	10.71	10.71	10.71	10.71	7.49	S.A.	87.00
564-A	Edgar Chapman (Co. Funds)	5	Charlotte	10.88	2.51	2.51	....	....	G.	24.00
564-B	Boone & Wester	5	Charlotte	10.31	10.31	10.31	....	....	G.	100.00
565	State Forces	1	Madison	15.64	14.59	14.35	....	2.90	S.C.	74.00
570	Morgan-Hill Paving Co.	5	Manatee	3.96	3.96	3.96	3.96	3.80	B.M.	97.00
571	Hunter & Gladwell	1	Madison	14.73	5.52	4.42	....	0.00	S.C.	41.00
572	L. M. Gray	13	Bradford	7.30	7.30	7.30	3.65	....	R.	46.00
574	State Forces	9	Madison	11.66	10.61	6.99	....	0.00	S.C.	69.00
575	State Forces	3	Putnam	5.46	5.18	4.91	4.53	0.00	R.(S.T.)	70.20
576	S. T. Buchanan & Son	5	Sarasota	5.68	0.22	1.06	....	....	G.	22.00
579	State Forces	1	Holmes	8.62	8.10	6.46	....	5.79	S.C.	72.00
586	State Forces	1	Jackson-Wash'ton.	17.37	3.47	3.30	....	1.73	S.C.	41.00
594	State Forces	13	Bradford	9.095	9.095	9.00	....	....	G. & D.	97.00
594	L. M. Gray	13	Bradford	9.095	....	....	2.50	....	R.	27.50
597	J. Y. Wilson	4	Volusia	16.24	5.68	5.03	0.00	....	R.	8.60
598-A	W. J. Bryson Paving Co.	1	Jefferson	9.45	4.72	3.78	....	0.00	S.C.	40.00
598-B	State Forces	1	Jefferson	7.80	3.04	.23	....	0.00	S.C.	2.00
599	M. M. Boyd	2	DeSoto-Charlotte.	7.40	7.40	6.66	....	1.11	S.C.	55.00
604	C. F. Lytle	4	Volusia	7.72	0.77	0.00	0.00	....	R.	0.22
607	State Forces	13	Bradford	5.10	5.10	4.08	....	....	G.	87.00
607	L. M. Gray	13	Bradford	5.10	....	....	.56	....	R.	11.00
608	State Forces	4	Brevard	9.29	6.41	2.13	0.00	....	R.	7.00
	Totals			430.40	387.26	158.39	173.56			

TOTAL MILES COMPLETE.

	Clearing Miles.	Grading Miles.	Base Miles	Surface Miles.
Complete April 30, 1924	1001.52	959.56	319.36	561.84
Complete May 31, 1924	29.73	21.42	15.09	16.10
Total May 31, 1924	1031.25	980.98	334.45	577.94

	Concrete.	Brick.	S. Asphalt.	Bit. Macadam.	S. T. and Rock.	Sand Clay.	G.&D.	Total
Complete April 30, 1924	77.42	25.15	65.29	125.96	89.65	312.47	198.82	894.76
Complete May 31, 1924	1.18	0.00	3.33	2.37	13.06	9.43	2.37	31.74
Total May 31, 1924	78.60	25.15	68.62	128.33	102.71	321.90	201.19	926.50

Note—The above tabulation shows only those projects that are actually under construction at the present time and does not show projects that have been previously completed. However, the table, "Total miles completed," at the foot includes all projects that have been completed prior to May 31st, 1924, and the amount completed in May also. The abbreviations used are as follows:

C.—Concrete. S.A.—Sheet asphalt. B.M.—Bituminous macadam. R.—Rock base. S.C.—Sand clay. G.&D.—Graded and drained. S.T.—Surfaced treated.

Protecting the Motor Morons

Since the crop of *homo boobiens* intent on committing *hari kari* on the public highways by the motor vehicle route shows no sign of decreasing, it becomes mandatory for road builders to incorporate in the design of roads all those features of safety that can, in any measure, reduce the daily slaughter. So long as the philosophical precept exists that a man's life is not his own but the possession of the State and must be protected regardless of his own wishes in the matter, the slithering of morons upon the landscape at dangerous grade crossings and along precipitous mountain roads must be prevented insofar as is humanly possible.

The subject of preventing grade crossing accidents is receiving ample attention. Highway officials are giving a great deal of study to the location of new roads that grade crossings may be avoided and much reconstruction is under way to eliminate existing hazards. In many localities where re-location is too expensive or not feasible for some other reason, grade separations either by undercrossings or overcrossings are being effected. The potential menace of the grade crossing has so thoroughly impregnated itself within the public consciousness that its total eradication is a certainty in the not far distant future.

But there are many other dangerous points on the average road that have received only superficial consideration. I refer to curves, fills, bridges, roads constructed on mountain slopes and over structures. There are few roads today with a surfaced width of more than 20 feet. To this is generally added from three to six feet of shoulder on both sides. The shoulder, being travelable, the road is given from six to twelve feet additional width which can be employed by the motorist in an emergency. The danger spots occur where it is impossible to build shoulders. To compensate for this, engineers design and build guard rails, the prevailing practice being to build them either of wood, iron pipe or concrete, those of the wooden type being preponderant.

If the theory of design be that the guard rail is simply a guide rail and not a material protection to the traveler, the construction of flimsy wooden structures is defensible; but if it be held that the guard rail should actually serve to arrest the motion of the vehicle that strikes it, there is no logical reason for the present design. In the days before Henry Ford's perambulators cluttered up the thoroughfares and only a virile he-man had the timidity to venture forth at the wheel of an automobile, the guard rail as a guide rail might have sufficed, but now, ah, now, such a scheme only stimulates wholesale manslaughter.

A radically different type of guard rail must be designed. I know not what it will be. It may be a three or four-barred fence of railroad rails, mounted on twelve-by-twelve posts, or we may be forced to develop masonry or concrete structures that will withstand the constant onslaughts of frenzied motorists. This much is true—the general type of guard rail in use today is about as effective in preventing accidents on dangerous sections of roads as the multifold types of crossing signals have been in preventing grade crossing accidents.

The only means of lowering the public highway casualty rate is to make it virtually impossible for the individual bent upon destroying himself from accomplishing his purpose. It's rather a nasty trick to play upon him, but it seems necessary for the welfare of his fellowmen.—Western Highways Builder.

In the Future

Just what the future holds for transportation no one can accurately foretell. That it will be marvelous and almost past present day comprehension is certain. The man who today speaks of launching a great torpedo, spacious enough for both passengers and freight, to the planet of Mars, may not be considered mentally abnormal one hundred years from now. Although such a feat seems impossible, many people today put credence in proposed plans even more visionary, and that with some cause; for, when we consider the marvels, wireless telegraphy, radio, electrical apparatus of all kinds, and other inventions equally great, we realize that "anything is possible."

It was only a little over half a century ago that our grandfathers were slowly winding their way across the continent in covered wagons. Slowly and painfully, week after week the weary journey was continued until death from starvation, lack of water, or wounds inflicted by marauding Indians, brought them to a different journey's end. At the present time, people make that same trip simply for pleasure; and what a difference in conditions. The process of evolution has given us good roads, automobiles, security and pleasure in place of Indian trails, prairie schooners, dangers and hardships.

Who of the old "Forty-niners" would have believed that the not distant future would be a time when ships that traveled through the air would make the coast-to-coast journey in almost the time it took them to prepare and eat breakfast, harness up and get under way for the day. Truly the comparison tends to prepare us for great strides in the matter of transportation which may be made in the future.

Possibly a bit exaggerated and perhaps a few years premature, yet on the whole a true prophecy, is the following story taken from the Pittsburgh Chronicle-Telegraph:

It was in the year 1935. A New York matron, coming down to breakfast, met her only son ascending the stairs. He was headed for the roof, where his fast airplane awaited him.

"Where to, Tommy " asked the matron.

"Denver for lunch, mother."

"Well, you have a perfect day for flying."

"That is what I thought. So from Denver I may hop off to San Francisco for a little golf."

"Very well, my son. But be home early for dinner."—Texas Highway Bulletin.

New Road Funds Apportioned by Secretary of Agriculture

Provision for Federal aid for the fiscal year 1925 which begins on July 1 is made in the Agricultural Appropriation bill signed by the President on June 5. The bill authorizes the Secretary of Agriculture to apportion to the states immediately the $75,000,000 authorized by the Postoffice Appropriation act of June 19, 1922, and appropriates $13,000,000 to be immediately available, the remainder to be made available in later appropriations. The secretary signed the apportionment order June 6 and as a result there will be no interruption to Federal aid road work.

The apportionment is made to the states on the same basis as for preceding years, except that Hawaii is for the first time admitted to a share which is on the same basis as for the states. This has been provided for in an act of the present session of Congress.

Since 1916 a total of $540,000,000 has been made available by previous acts of Congres. The Bureau of Public Roads of the U. S. Department of Agriculture which administers these funds reports the status on May 31 as follows: Completed 32,099 miles, under construction 17,000 miles, approved for construction 2,518 miles, and $33,106,126 available for new projects.

Practically all of the old funds and the entire amount of the new funds have been or will be expended on the Federal aid highway system of the United States. This system provided for by the Federal Highway act of 1921 consists of approximately 170,000 miles of road and has been designated by the states and approved by the Federal Government. At the beginning of the present year it was estimated that 60,000 miles of the system had been surfaced, about 8,700 miles graded, leaving 110,000 miles to be surfaced. Some of this work had been done by the states independently of Federal aid. To surface the remaining 110,000 miles by 1934 will require an annual program of 11,000 miles.

The new legislation carries an appropriation of $6,000,000 for national forest roads and trails, $3,500,000 of this amount being the remainder of the $6,500,000 authorized for the current fiscal year and $2,500,000 being the initial appropriation of the $6,500,000 previously authorized for the fiscal year 1925. The Secretary of Agriculture is also authorized to apportion and enter into contracts against the $4,000,000 remainder of the authorization for 1925 not yet appropriated.

In the apportionment of Federal aid funds made by the secretary the amounts received by the various states are as follows.

State.	Amount.	State.	Amount.
Alabama	$1,542,052.56	Nebraska	$1,577,155 34
Arizona	1,053,003.56	Nevada	947,623.25
Arkansas	1,258,857.07	New Hampshire	365,625.01
California	2,464.990.78	New Jersey	936,413.03
Colorado	1,361,482 06	New Mexico	1,185,528.88
Connecticut	475.513.91	New York	3,663,105.86
Delaware	365,625.17	North Carolina.	1,697,246.16
Florida	887,336.52	North Dakota..	1,178,708.13
Georgia	1,983,022.99	Ohio	2,795,804.69
Hawaii	365,625.00	Oklahoma	1,753,189.71
Idaho	936,698.01	Oregon	1,176,830.15
Illinois	3,203,867.99	Pennsylvania	3,365,956.21
Indiana	1,939,903.32	Rhode Island	365,624.87
Iowa	2,078,248 33	South Carolina.	1,054,028.17
Kansas	2,081,230.04	South Dakota..	1,209,144.18
Kentucky	1,411,584.45	Tennessee	1,628,740.97
Louisiana	995,301.59	Texas	4,410,169,76
Maine	686,453.36	Utah	847,741.90
Maryland	635,945.01	Vermont	365,625.27
Massachusetts..	1,089,806.22	Virginia	1,448,562.55
Michigan	2,226,824.73	Washington	1,113,308.17
Minnesota	2,120,906.56	West Virginia..	798,275.47
Mississippi	1,294,371.65	Wisconsin	1,877,600.32
Missouri	2,423,485.75	Wyoming	936,372.13
Montana	1,544,483.19		

—The Highway Engineer and Contractor.

MOTOR DISPLACES DOG

The march of science into the frozen expanses of the far North is bringing a new era of rapid communication across the wilderness of snow. Mail planes equipped with landing skis, and swift, motorized sleds may soon replace the picturesque dog teams, just as the motor car is replacing the camel of the desert.

The United States Postoffice Department recently announced plans for airplane mail service from the terminus of the government railway at Nenana, Alaska, to Fairbanks. Thus a 20-day delivery service by dog team will be supplanted by a four-hour mail service.

A more dramatic transition, according to Popular Science Monthly, is that from dog-drawn sleds to sleds driven by motor. These already have made their appearance in Finland, a motorcycle engine furnishing the propulsion through a bicycle wheel. The contact of the rubber tire with the snow is said to create sufficient friction to drive the sled forward. The cheapness, lightness and conveniences of these new vehicles make them, it is said, admirably suited for traveling over the snows.—Texas Highway Bulletin.

GET YOUR MONEY'S WORTH

Everything you eat, wear, live in, sell or play with, at some stage of its production has to be hauled over the roads. How much you have to pay depends on how good those road are. Some folks haven't found that out yet, and that's why they will spend only a little on the roads, and then pay a great deal because of the roads.

You know why you buy a good suit of clothes, a strong plow harness, a well made desk, or a concrete sidewalk—because you want the quality that gives you your money's worth before the article wears out.

Just so with roads. They have to stand harder wear than anything else you use—that's why you should demand permanent roads. Permanent roads have the qualities that resist wear and hard usage. The states and counties which have had permanent roads longest know by experience that the people get their road money back before the roads wear out. That's why they keep on building permanent roads.—Exchange.

Conners Highway Is Opened

With an elaborate and carefully worked out programme, and with a tremendous crowd present for the dedication exercises, the Conners Highway between Palm Beach and Okeechobee was formally opened on July 4th. An excellent idea of the road, the country it serves and the difficulties and problems encountered in its construction are covered in the following extracts from an article by R. Y. Patterson, General Manager of the Conners Highway Department, written before the completion of the Highway and which appeared in the Florida Engineer and Contractor:

The Conners Highway is a private toll road, fifty-one miles long, extending from the end of the existing surface road which runs west from Palm Beach along the Palm Beach canal, and twenty-two miles out from Palm beach, to Okeechobee.

The new highway parallels the Palm Beach canal on the south bank for nineteen and one-half miles through the heart of the Everglades to Canal Point, where the canal terminates in Lake Okeechobee. From this point the highway crosses the canal and traverses the eastern shore of the lake for thirty-one miles to Okeechobee, crossing the St. Lucie canal nine miles north of Canal Point and the Onoshohatchee river at its juncture with Lake Okeechobee, three miles south of the end of the highway, where it connects with Parrott avenue.

The Conners Highway is designed to form a connecting link in the first hard surface cross-state highway, and will join Tampa and the West Coast with Palm Beach, on the East Coast of Florida. It is penetrating and opening up for development a wonderfully fertile district surrounding Lake Okeechobee; a district that has been, prior to this time, cut off from ready access to the channels of trade, and which has, accordingly lain dormant and almost unknown.

Mr. W. J. Conners of Palm Beach and Buffalo, N. Y., has undertaken the development of this new country, and has acquired large tracts of land throughout the area to be influenced by the highway under construction. Recognizing the urgent need of a first-class highway across the lower peninsula of Florida, and the opportunity afforded of doing some empire building for one who could and would, he obtained from the State of Florida a franchise to build a toll road connecting Palm Beach and Okeechobee. There still remained a link from Okeechobee to Sebring that would have to be built and paved before the road would be open all the way through. He has interested himself in pushing this work by state and county, and at this time construction is progressing on all parts of it. North of Sebring, and extending from there to the West Coast, the lake region of Central Florida and on to the East Coast by way of Orlando, Sanford, DeLand and Daytona, there exists a good system of hard surface highways. With the early completion of the Conners Highway, and the completion of the several contracts under way between Okeechobee and Sebring, there will be placed in service a highway with a paved width of sixteen feet and surfaced with rock and asphalt. This lower end will be tied in with the system of roads further to the north and extending from coast to coast. Thus the strategy of this new highway is explained. But, unlike

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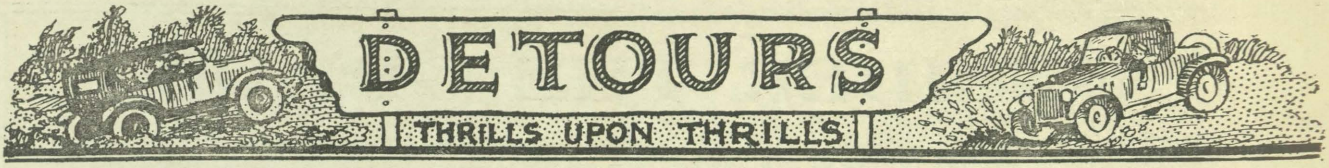

Advance Notice

"You have sworn to tell nothing but the truth."
"Nothing but the truth, your honor?"
"Precisely."
"Then, Judge, with that limitation upon me, I might as well warn you that I'm not going to have much to say."—Auto News.

And No Damages

Mr. Peck—"What a wonderful view!"
Mrs. Peck—"You keep your eyes on the road, Henry! You can get that view on a post-card for five cents."—Judge.

A Parking Episode

Nuf—"Yes—we had the loveliest time—Jack's car is a wonder. We passed everything on the road."
Sed—"Well—we had a lovely time, too—everything passed us."—Beanpot.

Dangerous Occupation

Old Gentleman (engaging a new chauffeur)—"I suppose I can write to your last employer for your character,"
Chauffeur—"I'm sorry to say, sir, each of the last two gentlemen I have been with died in my service."
—The Exhaust.

Inexperienced

Down in Texas the short cotton crop forced a large number of country negroes to the cities. One of them applied for a job at one of the large employment agencies.
"There's a job at the Eagle Laundry" said the man behind the desk, "Want it?"
The applicant shifted uneasily from one foot to the other.
"Tell you how it is, boss," he said finally, "I sure does want a job mighty bad, but the fact is, I ain't never washed no eagles."—The Open Road.

"By Ear"

"My dear young lady," said the clergyman in grieved tones, as he listened to the extremely modern young woman tear off some of the very latest jazz on the piano, "have you ever heard of the Ten Commandments?"
Modern Young Lady—"Whistle a few bars and I think I can follow you."

Sarcastic Boss

Smith is a young lawyer, clever in many respects, but very forgetful. He had been sent to a distant city to interview an important client, when the head of his firm received this telegram: "Have forgotten name of client. Please wire at once."
The reply he received was a masterpiece of sarcasm, irony or something. It ran. "Client's name Jenkins. Your name Smith."—Lawyer and Banker (New Orleans.)

His Boast

Lady—"And you say you are an educated man?"
Weary Willie—"Yes, mum, I'm a roads scholar."
—University of Michigan Gargoyle.

Auto Hint

Wear a large hat instead of a cap. A hat protects your ears as you go through the windshield.—Tom Sims Newspaper.

Netty: "Would you marry for money?"
Letty: "Well, I hope Cupid aims at me with a Pierce-Arrow."—Judge.

Don't envy the traveler. The home billboards are equal to those he sees.—Denton (Texas) Record-Chronicle.

"Midnight."

The janitor's little boy, very black, was nicknamed "Midnight" by his white neighbors. He didn't mind their calling him that but one day when one of his own race exclaimed "Hello, Midnight!" he indignantly retorted, "Shut up, you'se just about quarter to twelve yo'self!"—The Investigator.

Hordes of autos now remind us,
We must mend our road today;
And departing leave behind us
Paths that are not worn away.

When our children pay the mortgage
Father made to carry the load,
They'll not have to ask the question
Here's the bond, but where's the road?
(With apologies where they are due.)

UNUSUAL MATERIALS USED FOR ROAD BUILDING.

(Continued from Page Ten)

wise logs—is not so unusual as it is abominable to travel over. In many localities iron, a blast furnace slag and other waste materials from industrial operations furnish more or less satisfactory road materials. The natural asphaltic sand deposits in Utah furnish "ready mixed" road materials of good quality. A new source of road material may be supplied by the projects to treat the oil shale deposits of the west and in the central states. This burned shale or clay has some of the heavy oil products remaining therein and this constitutes a "binder" for the fine shale or clay. In the South the crushed cone is a fair body for roads through the swampy areas.

After considering these unusual materials it may be noted that the modern road builders find it practical to go to far-off Trinidad for asphalt for roads, or to use tar products obtained by elaborate processes as by-products of the coke and gas plants or natural or waste oil, something quite unusual in itself considering the old ideas of road building.—Kirby Thomas in The Highway Engineer & Contractor.

NOTHING NEW UNDER THE SUN.

(Continued from Page Eleven)

I do to be saved? I mean in regard to the fool law our farmer legislators passed regarding the carrying of billboard tags and dog licenses.

"Kindly send me the necessary blanks that I may carry out the joke according to the light of the law. Also, kindly tell me how in hell a rear license tag can be illuminated on a motor-cycle. This I understand is required.

"If you know of any such fund, will you kindly tell me where I may contribute ten times the amount of the license fee to revoke this idotic legislation and snow under the perpetrators of such grim humor?"

Nuff sed!—Penn Ways.

Marion County's two big roads are building steadily on. The Dixie Highway, coming from Belleview, is pushing along by McAteer's farm, half a mile from the Seaboard crossing. It will be to the crossing by the end of next week, and then for the first time in half a dozen years there will be a good road from Ocala to Leesburg. Eight out of the eleven miles of road 5 are hard surfaced, and that very important road will be finished, except for the asphalt coat, by the first of August. The cause is marching on.—Ocala Star.

A news item reports that in tropical countries snake skin is frequently used in upholstering automobiles. We'll bet we know which automobile is decorated with the skins from rattlers.—Southern Lumberman.

People who think too much of themselves do not think enough.—Columbia Record.

CONNORS HIGHWAY IS OPENED

(Continued from Page 21)

military strategy, it is in the open, and is for the use and benefit of the multitude.

Two large motor bus companies from the North have arranged to place in service a sufficient number of Pullman motor coaches to provide an hourly schedule between Tampa, Palm Beach and Miami, and it is expected that this cross-state highway will at once become one of the heaviest traveled, all-year-round, motor arteries in Florida.

Account had, therefore, to be taken of this expected traffic in the design of the road. The problem, in a broad sense, was to provide a heavy duty highway, in the shortest time possible, through new country, through lake and Everglade, on a roadbed that would be almost wholly an embankment which was to rest on a muck base of undetermined stability.

In the first place, no such heavy traffic road had yet been built through the Everglades, and the problem of obtaining a solid roadbed on the unstable muck of the Glades had to be satisfactorily answered; in the second place the road borders closely the eastern shore of Lake Okeechobee—both for scenic and utilitarian reasons—and the problem of unstable foundation had added to it the effect of periodical high water, and of storm action on the roadbed.

Through the Everglades, along the Palm Beach canal, there exists in the bottom of the canal, a thick strata of marl and marl rock. By deepening the canal and depositing the dredged materials on the bank a splendid roadbed is obtainable, although it must rest on the boating muck surface. A berm of twenty-five feet between the edge of the canal and the toe of the roadbed embankment was specified, the material as wide as possible to form a mat over the muck and sufficient thrown out so that a certain proportion of it could be forced into the muck surface, consolidating it and providing a foundation that would take care of the heaviest traffic and trucks.

It was the original intention to surface the entire road with two layers of graded rock, one to be six inches and the top three inches compacted. This top was to be full penetrated. This was changed and one layer of crusher rock seven and one-half inches finished was decided upon, after finishing the surface to be treated with about four-tenths gallons of oil per square yard. This will provide a sufficient thickness of surface, well protected during the time that the roadbed is taking its final settlement, and expensive material will not have been wasted. It is contemplated that after sufficient time has elapsed for settlement, and the entire road has been carefully manitained and weak spots repaired as required, an additional layer of rock will be applied and thoroughly penetrated.

The width of the paving throughout was made sixteen feet to conform with standard state work. The minimum width of road section was made twenty-four feet to obtain a four-foot shoulder on each side of the paving.

The bridges, twenty-six in number, are all built to a standard pile trestle design, with clearance of 18 feet 8 inches between hand rails. The piling and lumber was cut from Mr. Conners lands and all lumber cut by the job sawmill, specially built and equipped for this highway construction.

An excellent grade of lime rock had been dug out of the St. Lucie canal at the Lake Okeechobee end when this lined the north and south banks for a mile and a half, making good spoil banks to get into for a supply.

* * * * *

The roadbed is nearly all in fill and was made with draglines. The material, generally, is quite good, but there are several miles of muck foundation that caused some trouble until they were consolidated and a heavy course of rock applied. There have been a few washouts of the grade caused by lake storms, but such places are few and are being protected with revetment. The fill is about four feet in height as an average, and twenty-seven feet wide.

A telephone line was built along this section for its thirty-one miles, connecting at Okeechobee. This line is used for train service as well as communications between headquarters and camps. Each train is equipped with a portable phone, and attachment can be made with the line at any point. At all side tracks there is a plug.

The method of delivering rock to this division is by train, and a thirty-six inch gauge track was laid from Taylor Crook to St. Lucie canal, a distance of twenty miles. The rail used is thirty to forty pounds, and ties were cut near Okeechobee. This track was placed in the middle of the roadbed, after trial with it on the side. The new fill made it unwise to consider this point outside location. As the rock is delivered to the north end of the track, this track is taken up, loaded on barges at the first available dock and sent around between St. Lucie canal and Canal Point, where it is re-laid. Side tracks are placed every two miles for passing trains.

There are two fourteen-ton steam dinkies, and four eight-ton Whitcomb gas locomotives used in the train service. One gas engine with two flat body trucks is in constant service as a work train, the others are in the rock service. The gas locomotives haul nine four-yard cars, and the steam locomotives as many as are available, but their load is usually kept at about fourteen cars. There are forty cars used for rock hauling and all locomotives are not at all times used. The two steam locomotives, with one gas engine, will handle the material, but constant work is needed to keep this rolling stock in running order, as the service is very severe. Trains are being operated over the line night and day.

Longitudinal partitions were placed in the dump cars going out on the road. When all four chains are knocked loose the car dumps in either direction, but as soon as one side has emptied its load the center of gravity shifts and the car automatically dumps to the other side. This secures even distribution on each side, and involves a minimum of spreading and raking.

Trains are in constant touch with a dispatcher, who is located at camp headquarters with a dispatching board on which is marked all side tracks with plugs provided for locating trains. Track is maintained by a couple of small mobile gangs who move from point to point on trains and by track motor car.

Fine grading on this part of the work is done by hand.

After rock sufficient for the section has been dumped and the track removed, the rock is spread and rolled and finished in one operation. Two ten-ton gas rollers equipped with scarifiers are provided, a water wagon mounted on an auto tuck, portable pump for water supply, street sweeper and brooms, and the usual tools for this work made up the equipment.

Oiling has not yet started, but a Kinney pressure distributor on a Mack truck is ready for this work.

The entire operation is in charge of Mr. R. Y. Patterson, general manager; Mr. W. L. McGriff, auditor; Mr. Daniel Downey, general superintendent; Mr. F. E. Lawrence, chief engineer; Mr. D. H. James, superintendent of the crusher plant; Mr. A. A. Sturgis, superintendent Division 1; Mr. J. C. Johnson, superintendent of Division 2; Mr. Jack Barrett, division engineer.

The work is laid out on progress charts and time schedules, and the road will have been completed one year after it was started. The total cost of the highway will be in the neighborhood of two million dollars.

Dade County to Vote on $2,070,000 Bonds

Bonds totaling $2,070,000 for road construction will be passed upon at an election on August 19, which has been authorized by the Dade County Commissioners. Eight separate projects are contemplated, the largest of which will be the widening of the causeway at a cost of $600,000. Another important item will be the construction of 34.75 miles of the Tamiami Trail to cost $125,000, and in connection with this project $160,000 will be expended to widen southwest Eighth street to a width of 50 feet.—Manufacturers Record.